

Amendments to the Drawings:

The Examiner objects to the drawings for failing to show every feature specified in the claims. Specifically, the Examiner indicates that the recited “evaluation circuit” in claim 1 must shown in the drawings or removed from the claim.

Applicants have amended the drawing to show the evaluation circuit shown in dashed line and referred to by reference numeral 10. No new matter is added, as support for this added element of the evaluation circuit can be found at, e.g., page 5, lines 26-28 of the specification which states, “In the switch housing 3, there is an evaluation circuit 10 that is not shown, which is connected to the acceleration detectors 6 and which thus does not just feed them with electrical energy, but also detects and evaluates the signals sent from the acceleration detectors.” There is also support for the evaluation circuit at page 6, lines 8-23 and page 7, lines 8-21. Withdrawal of these objections is therefore requested.

Attachment: Replacement Drawing

REMARKS

Claims 13 and 14 have been amended, and claims 18-24 have been added. Claims 13-24 are pending and presented for review. Favorable reconsideration and allowance are requested in light of the foregoing amendments and the remarks which follow.

1. Drawing Objections

In paragraphs 5-7 of the Office Action, the Examiner objects to the drawings for failing to adequately relate or show every feature of the invention specified in the claims. To address these objections, submitted herewith is a replacement drawing that schematically shows an evaluation circuit illustrated in dashed line and referred to by reference numeral 10. No new matter is added, as support for this added element of the evaluation circuit can be found at, e.g., page 5, lines 26-28 of the specification, as originally filed. That section states, "In the switch housing 3, there is an evaluation circuit that is not shown, which is connected to the acceleration detectors 6 and which thus does not just feed them with electrical energy, but also detects and evaluates the signals sent from the acceleration detectors." There is also support for the evaluation circuit at page 6, lines 8-23 and page 7, lines 8-21. Withdrawal of these objections is therefore requested.

2. Amendments to the Specification

The specification has been objected to because it incorporated by reference the subject matter of the claims. The specification has been amended to positively recite the features of the claims to address this objection. Withdrawal of the objection is therefore requested.

In addition, the Written Description portion of the specification has been amended to

reference the evaluation circuit shown in dashed line and referenced by numeral 10 in the drawing and place the application in better condition for allowance. No new subject matter has been added, as support for these amendments was described above in relation to the Amendments to the Drawings.

3. Rejections Under 35 U.S.C. 112, first paragraph

The Examiner rejected claims 13-17 under 35 U.S.C. 112, first paragraph, because the specification allegedly does not provide reasonable enablement for the recited algorithms to show one skilled in the art how the recited evaluation circuit uses the operating parameter (e.g., motion of vibration unit, the oscillatory amplitude of the vibration unit, oscillatory frequency, RPM change, excitation frequency of the motor, and the winding temperature of the stator of the motor) to determine a “densified state” of the material.

The attached 37 CFR §1.132 declaration of Dr. Georg Sick demonstrates that the specification, coupled with the knowledge of one skilled in the art, would have guided one skilled in the art to determine an algorithm that uses the recited operating parameters to determine the “densification state” without undue experimentation. First, the specification cites evidence in the form of a British patent that it is known that a poker vibrator operational characteristic, namely engine RPM, varies with densification in an identifiable manner. Specifically, the specification refers to the GB 1097651 patent, which discloses how to use the electrical power consumption of the vibrator motor to determine a trend in a “densified state” of the material. The disclosure of such a concept in a widely available publication such as a prior

patent constitutes strong evidence that that concept is known to those skilled in the art. The Examiner also should refer first to page 5, lines 15-19 of specification, which discloses acceleration detectors 6 serving as motion measurement devices. The specification also states that the evaluation circuit 10 receives and evaluates the signals provided by the acceleration detectors 6 (page 5, line 26 – page 6, line 1 of specification). The specification also discloses specific parameters which can be monitored with precision and which vary in a predictable manner with density, including acceleration and power consumption. The specification further discloses that evaluation characteristics or algorithms for determining densification for a particular monitored parameter such as acceleration or power consumption can be established by an expert by means of “preliminary tests to relate or map corresponding parameters to the densification results” (page 6, lines 3-7 of specification). The Sick Declaration proves that one skilled in the art would understand this to be a description of a method of creating and storing a of mapped relationship between the measured data and the trend in densification, so that later measured parameter could be applied to this map so as to determine an indication of the densified state of the material. The Sick Declaration estimates that one skilled in the art could generate a map through simple experimentation, and that it would take one skilled in the art no more than ____ hours to create such a map or algorithm relating the measured motion parameter to the trend in the densified state of the material. Once such a map is created and stored in the disclosed on-board memory, it is a small matter to produce a signal based on a measured change in the operating parameter that corresponds to a change in a densified state of the material.

In view of the Sick Declaration and the above arguments, Applicant requests reconsideration and withdrawal of the rejections under 35 USC §112.

The Examiner also indicates that the last limitation of claim 13 does not constitute a structural limitation. However, in accordance with MPEP 2173.05(g), “there is nothing inherently wrong with identifying some part of an invention in function terms. Functional language does not, in and of itself, render a claim improper.” See also *In re Schrieber*, 44 USPQ2d 1429 (Fed. Cir. 1997). That limitation *must* be considered.

4. Rejections Under 35 U.S.C. 102(b) and 102(e)

Claims 13-14 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by GB 1097651 (herein the GB ‘651). Claims 13-17 also stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 5,992,238 to Heimbruch et al. (herein the Heimbruch et al. patent). Applicant traverses the rejections in view of the prior art for the following reasons.

Claim 13 recites a poker vibrator to densify a flowing material that includes a vibration unit, a switching unit separated from the vibration unit through an elastic connection, a measurement device to detect at least one operating parameter of the poker vibrator, and an evaluation circuit to evaluate measured values detected by the measurement device. The operating parameter is a parameter from the group consisting of the motion of the vibration unit, the oscillatory amplitude of the vibration unit, its oscillatory frequency, the RPM of the electric motor, the electric excitation frequency of the electric motor and the winding temperature of a

stator of the electric motor. A signal is produced by the evaluation circuit based on a measured change in the operating parameter that corresponds to a change in a densified state of the material.

The GB '651 patent discloses a compactor that includes a meter 3 operable to generate a signal representative of a power or current consumption by a vibration motor. The GB' 651 patent does not disclose any of the claimed operating parameters recited in claim 13, let alone a motion detector device recited in claim 15 or an acceleration detector as recited in claim 17.

The Heimbruch et al. patent discloses a vibrator that includes processor means to determine a vibration speed of a motor based on a signal from a magnetic device 40 operable to measure rotation of a rotating gear 36' (col. 4, lines 57-61). However, the Heimbruch et al. patent does not disclose correlation of the vibrating speed to a density or compaction of the concrete. Rather, the Heimbruch et al. patent discloses recording the vibration speeds to determine optimal speeds at various conditions to achieve maximum structural strength of the concrete or impending failure of the vibrator (col. 1, lines 28-52). There is no teaching or suggestion of determining a trend in the compaction or densification of the material.

Thus, the cited references do not teach and every limitation of the claimed invention. Reconsideration and withdrawal of the rejections is respectfully requested.

Claims 14-17 depend either directly or indirectly from claim 13 and are believed allowable for the same reasons that claim 13 is believed allowable. Claims 14-17 also include patentable subject matter in addition to that recited in claim 13. As noted above, the GB' 651

patent does not disclose a motion detector device as recited in claim 15, or an acceleration detector as recited in claim 17.

5. New Claims

New claims 18-24 depend either directly or indirectly from claim 13, and are believed allowable for the same reasons that claim 13 is believed allowed. Claims 18-23 also recites patentable subject matter in addition to claim 13. Claim 18 recites that a measurement direction of the acceleration detector in claim 17 is generally perpendicular to the longitudinal axis of the vibration unit. New claim 19 the measurement device includes a first acceleration detector and a second acceleration detector, each first and second acceleration detector having a measurement direction perpendicular to the other. New claim 20 further recites that the measurement directions of both first and second acceleration detectors of claim 19 are generally perpendicular to the longitudinal axis of the vibration unit. New claim 21 further recites the poker vibrator of claim 13 further comprising a display illustrative of the change in the densified state of the material to an operator. New claim 22 further recites that the display of claim 21 includes a light bar having a variable length of illumination depending on the densification state of the material. New claim 23 recites that the display of claim 21 provides a variable brightness depending on the densification state of the material. New 24 recites that the evaluation circuit detects an optimum densification state of the material and generates a signal indicative thereof. Nothing in the prior art suggests an evaluation circuit configured in this manner.


Response to Office Action dated May 25, 2005
U.S. Serial No.: 09/937,331; filed September 21, 2001
Inventor: Kunze et al.
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CONCLUSION

It is submitted that claims 13-24 are in condition for allowance and each defines patentable subject matter. A Notice of Allowance is therefore respectfully requested.

No fee is believed to be payable with this communication. Should the Examiner consider any fees to be payable in conjunction with this or any future communication, the Director is authorized to direct payment of such fees, or credit any overpayment to Deposit Account No. 50-1170. The Examiner is invited to contact the undersigned by telephone if it would help expedite matters.

Respectfully submitted,



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Date: August 25, 2005

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